
REPEATER BOARD DESCRIPTION.

This paper describes briefly the repeater board (RPT) functionalities. This board is a first prototype used for testing hybrids and other functionalities as power supply regulation, analogue drivers and logic signals.

It is a 320 x 320mm eight layers board. Three layers are used for the analogue signals, two layers are used for the driver cards low voltage supply, one layer is the ground plane, one layer is the hybrid power supply, and one layer is used for the logic services signals.

The board carries mezzanines cards:

- 8 driver cards
- 1 power supply card
- 1 logic card
- Connectors for service signals as temperature probes, detector bias voltage.

Connector description.

J1-J2-J3-J4 connectors.

These connectors are 50 pins female Dsub numbered as a female connector and are used to connect the repeater board to the hybrid via a male-male feedthrough. The spacing between them is 76mm, which correspond to the pitch of the feedthrough connectors. The housing of the connector is connected to the ground using the holding screws. J1 to J4 corresponds to the K11 to K12 connectors on the hybrid schematics.

J5-J6-J7-J8-J9-J10-J11-J12 connectors.

These connectors are SIMM 72 pins micro edge connectors and are used to connect the driver cards to the repeater board. The 6 central pins are the driver card power supplies (+5V and -5V). Grounded pins separate analogue channels. Each driver card carries 8 channels which correspond to 2 Beetle chip outputs.

J14-J16-J18-J20-J22-J24-J26-J28-J30-J32-J34-J36-J38-J40-J42-J44 : analogue outputs.

These connectors are RJ45 connectors and carry the driver outputs. One connector corresponds to one Beetle chip output. This allowed to connect the output driver directly to the acquisition system using patch cables on the shelf. Each differential output signals are available on 10 pins connector. The two last pins of these connectors are connected to ground. Remark: be aware that not all these connectors are fitting the same direction.

J46 : hybrid LV connector.

This connector 26 pins brings the low voltage (2.5V) to the hybrid. Odd raw is connected to the power plane and the even pin raw is connected to the ground plane. The two last pins are the PSEN+ and PSEN- signals. Flat cable connector can be plugged to the pins

J45 : digital board connector.

The 26 pins connector provides all the digital signals to and from the hybrid. Flat cable connector can be connected to the pins.

J47 : Temp. connector.

The 16 pins connectors is called service connector. It carries signals from temperatures probes. The odd raw is the signals pins and the even pin raw is connected to ground. Flat connector cable is used to bring out the signals.

J49-J50-J51 : HV connector.

J50 is the connector to bring the detector bias voltage to the hybrid using a shielded cable. There is no connection between the cable shield and the ground plane. A lemo connector can be soldered on the pcb at this place.

J49-J50 are pins which allow to connect the guard ring or the HV return to the cable shield by using a jumper. A resistor can be solder to this place to break ground loops if the cable shield is connected to earth at the power supply side.

J48 : Analogue LV connector.

This 16 pins connector is used to supply the driver boards with low voltage (+5V, -5V). The pins 7-8-9-10 are connected to the ground plane.
